

**COAL DUST AS AN ELEMENT OF DANGER IN MINING; SHOWN BY
THE EXPLOSION IN THE ALBION MINES, Nov. 12, 1880. By
H. C. HOVEY, of New Haven, Conn.**

A preliminary glance at the history of the Albion Mines, in Nova Scotia, will aid us to understand the part played by coal dust in spreading and augmenting the explosion that destroyed those mines less than a year ago.

The Main Seam is 37 feet 6 inches thick, and is highly bituminous. It has been continuously worked since 1807. The earliest workings were abandoned in 1839, on account of a fire that burned so fiercely as to melt the chains used in raising the coal-tubs. A new opening, the Bye Pit, was worked till 1863, when a fire occurred from a shot lighting gas, and the pit had to be closed up. The Foster Pit was next opened; but in 1869 spontaneous combustion of slack caused a fire which necessitated its abandonment.

At length the Foord Pit was won out, and with its improved machinery, was regarded as one of the best mining establishments in America. The ventilation was effected by a large Guibal fan, said to be capable of circulating 120,000 cubic feet of air per minute through the ramifications of the mine. The drawing shaft is 1,000 feet deep, and the workings extend 1,800 yards to the north, and 1,700 yards to the south, the galleries varying from 9 to 15 feet in height, being driven in the upper part, the lower being left for later operations. Shortly before the accident referred to, I went entirely through the colliery, in company with Mr. Edwin Gilpin, Inspector of Mines, and we remarked the perfection of the ventilation, which was then maintained through the south-side at the average rate of 25,000 feet per minute, and expelled the deleterious gases from even the remotest bords.

On the morning of the disaster the night watchman reported the mine to be free from gas, except in small and harmless quantities. From what source, then, originated the series of explosions that began, within an hour from the time this report of entire safety was made, and continued at intervals until the mine became a furnace, whose flames could be subdued only by emptying into its burning chambers the waters of the adjacent East River? Was there some sudden exudation of gas from the solid coal? Or was this explosion due to the firing of coal dust from the flame of a

blast, an unsound safety-lamp, or even a match by which some unlucky workman, forgetful of the rules, undertook to light his pipe?

None of the forty-four men who witnessed the beginning of the catastrophe escaped to explain the mystery; and those rescued from more distant galleries had but conjectures to offer.

The workmen, on receiving assurance that the mine was free from gas, went down the drawing-shaft, took their safety-lamps at the lamp-cabin and went, a part of them into the north-side works, and the rest into the south-side dips, where they waited for their tools. At this moment, the explosion took place. It was first noticed at the fan-shaft, and a minute later at the drawing-shaft, having in one case travelled with and in the other against the ventilating current. Additional facts were gained, at the imminent risk of life, by Mr. Gilpin, and are as follows:

The exploring party went as far as the after-damp would allow. The locality where the workmen were known to be was 1,200 yards south of the shaft, and the party went about 600 yards in that direction. It was evident to them that the flame had not reached so far, for no marks of fire were on the dead bodies found, nor was the splintered woodwork charred. The walls looked as if swept by a broom, and were clear of timber. Volumes of dust lay on the floor, into which the party often sank to their knees. Clouds of finer particles were swept on into the north-side levels. At the lamp-cabin an open light had been kept burning for years, as it was considered safe, being within a few feet of the bottom of the shaft.

But here a secondary *explosion* took place, demolishing the cabin, fatally injuring the lamp-man, and burning the horses near by. The effect did not extend far into the north-side, and the men there were ignorant of the disaster, till warned by the overman to leave the pit. Secondary explosions, caused by generated, or extracted, gas, are usually near the primary one. But here is a case where the second was half a mile from the first, with an intervening space of a quarter of a mile known to be free from gas, because men were in it with lamps which gave no sign of its presence.

The ignition of these volumes of dust did not harm the shafting, because it was wet, and the flame was extinguished as soon as it touched the damp walls. Elsewhere this mine was a very dry one.